



US007802243B1

(12) **United States Patent**
Feeser et al.

(10) **Patent No.:** **US 7,802,243 B1**
(45) **Date of Patent:** **Sep. 21, 2010**

(54) **SYSTEM AND METHOD FOR SERVER CUSTOMIZATION**

(75) Inventors: **Colin Feeser**, Atlanta, GA (US); **Craig A. Spreha**, Riverdale, GA (US)

(73) Assignee: **Open Invention Network LLC**, Durham, NC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1152 days.

(21) Appl. No.: **11/407,659**

(22) Filed: **Apr. 20, 2006**

(51) **Int. Cl.**
G06F 9/44 (2006.01)

(52) **U.S. Cl.** **717/169**; 717/171; 717/172;
717/173; 717/175; 717/176; 717/177; 717/178;
713/2; 709/201

(58) **Field of Classification Search** 717/168–178;
713/1, 2; 709/201; 719/321

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,956,515	A *	9/1999	Beals et al.	717/170
6,006,034	A *	12/1999	Heath et al.	717/170
6,055,363	A *	4/2000	Beals et al.	709/201
6,117,188	A	9/2000	Aronberg et al.	
6,151,643	A *	11/2000	Cheng et al.	710/36
6,202,206	B1 *	3/2001	Dean et al.	717/177
6,282,709	B1	8/2001	Reha et al.	
6,314,516	B1	11/2001	Cagle et al.	
6,466,972	B1	10/2002	Paul et al.	
6,823,376	B1	11/2004	George et al.	
6,854,112	B2 *	2/2005	Crespo et al.	717/174
6,865,737	B1	3/2005	Lucas et al.	
7,266,818	B2 *	9/2007	Pike et al.	717/176
2002/0083429	A1	6/2002	Rozzenfeld et al.	
2002/0129356	A1	9/2002	Hellerstein et al.	
2002/0191014	A1	12/2002	Hsieh et al.	
2002/0194584	A1	12/2002	Suorsa et al.	

2003/0030664	A1	2/2003	Parry	
2004/0012628	A1	1/2004	Kropf et al.	
2004/0078787	A1	4/2004	Borek et al.	
2004/0088698	A1	5/2004	Claiborne	
2004/0177352	A1	9/2004	Narayanaswamy et al.	
2005/0010877	A1	1/2005	Udler	
2005/0132360	A1 *	6/2005	Chu et al.	717/177

(Continued)

OTHER PUBLICATIONS

Title: Demonstrational customization of a shared whiteboard to support user-defined semantic relationships among objects, author: Du Li et al, source: ACM, publication date: Sep. 2001.*

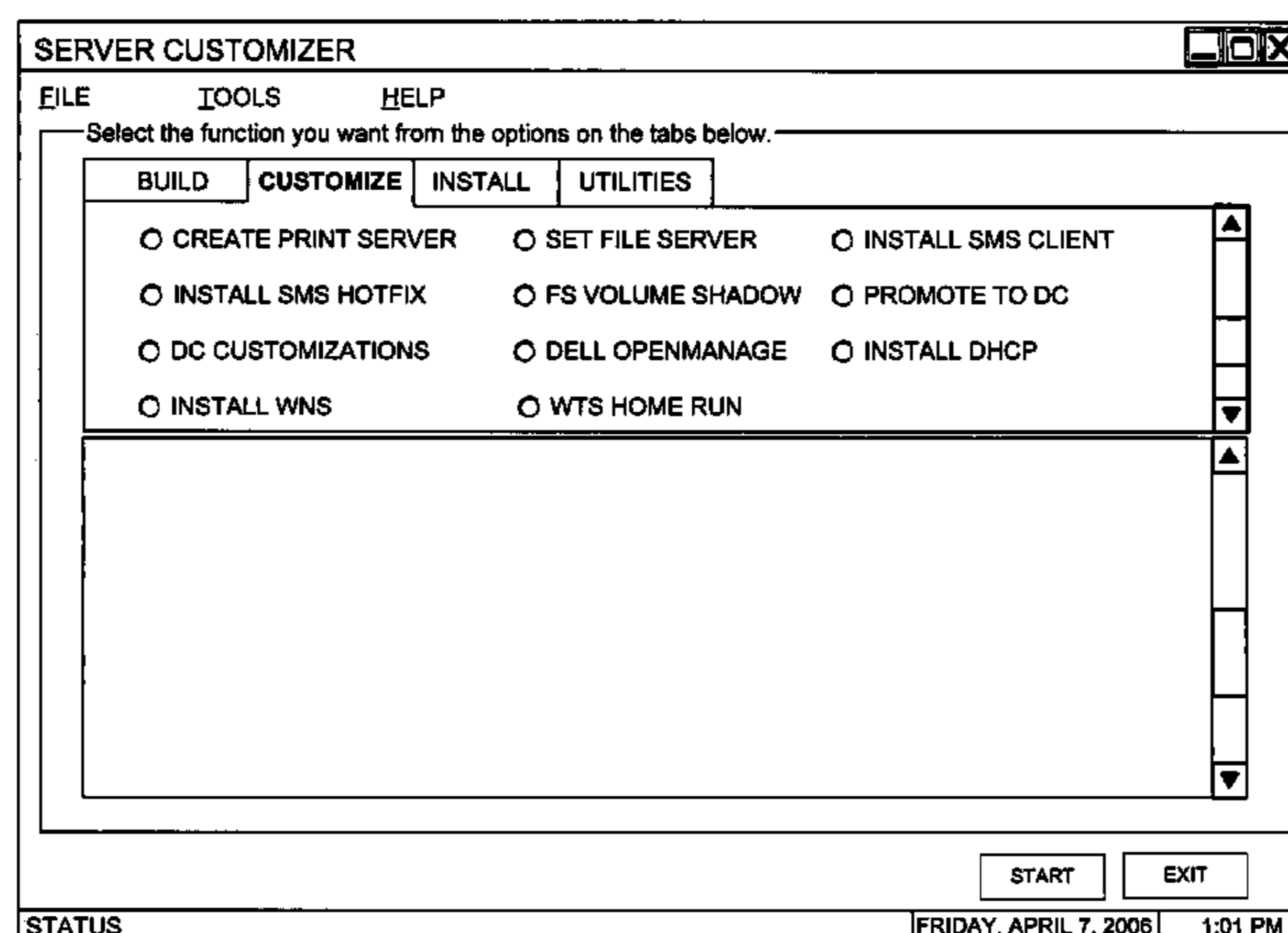
(Continued)

Primary Examiner—Chameli C Das

(57) **ABSTRACT**

A method, system and program product for customization of a plurality of servers in a computer network. A server customizer module is generated that includes a server customizer initialization file containing a plurality of arguments for populating and running a plurality of standardized applications, scripts and utilities on each server. The server customizer module is installed on each of the plurality of servers for subsequent execution as part of the server build/customization process. A server unattended install launch module, cooperative with the server customizer module is generated that includes an unattended install launch initialization file for launching a plurality of standardized processes on each server. The server unattended install launch module is installed on each of the plurality of servers for subsequent execution as part of the server build/customization process. The server customizer module and server unattended install launch module are executed on each of the plurality of servers to complete customization of each server.

43 Claims, 9 Drawing Sheets



U.S. PATENT DOCUMENTS

2005/0149607 A1 7/2005 Rhoades
2005/0172284 A1 8/2005 Dandekar et al.
2005/0188295 A1 8/2005 Konkus et al.
2005/0204363 A1* 9/2005 Bezanson et al. 719/321
2006/0168438 A1* 7/2006 Klein 713/1
2007/0006205 A1* 1/2007 Kennedy et al. 717/168
2007/0061803 A1* 3/2007 Barrett 717/178
2008/0005733 A1* 1/2008 Ramachandran et al. 717/168
2009/0113416 A1* 4/2009 Bealkowski et al. 717/177

OTHER PUBLICATIONS

Title: Commercial e-commerce servers and enterprise application integration: a case-based comparison of Net.Commerce and Site Server Commerce, author: Juul, N.C. et al, source: IEEE, publication date: 2001.*

Schaeck, "WebShere Portal Server and Web Services Whitepaper," IBM Software Group Whitepaper.

"Server Edition Administrator's Guide," FinePrint Software, LLC, May 3, 2005.

* cited by examiner

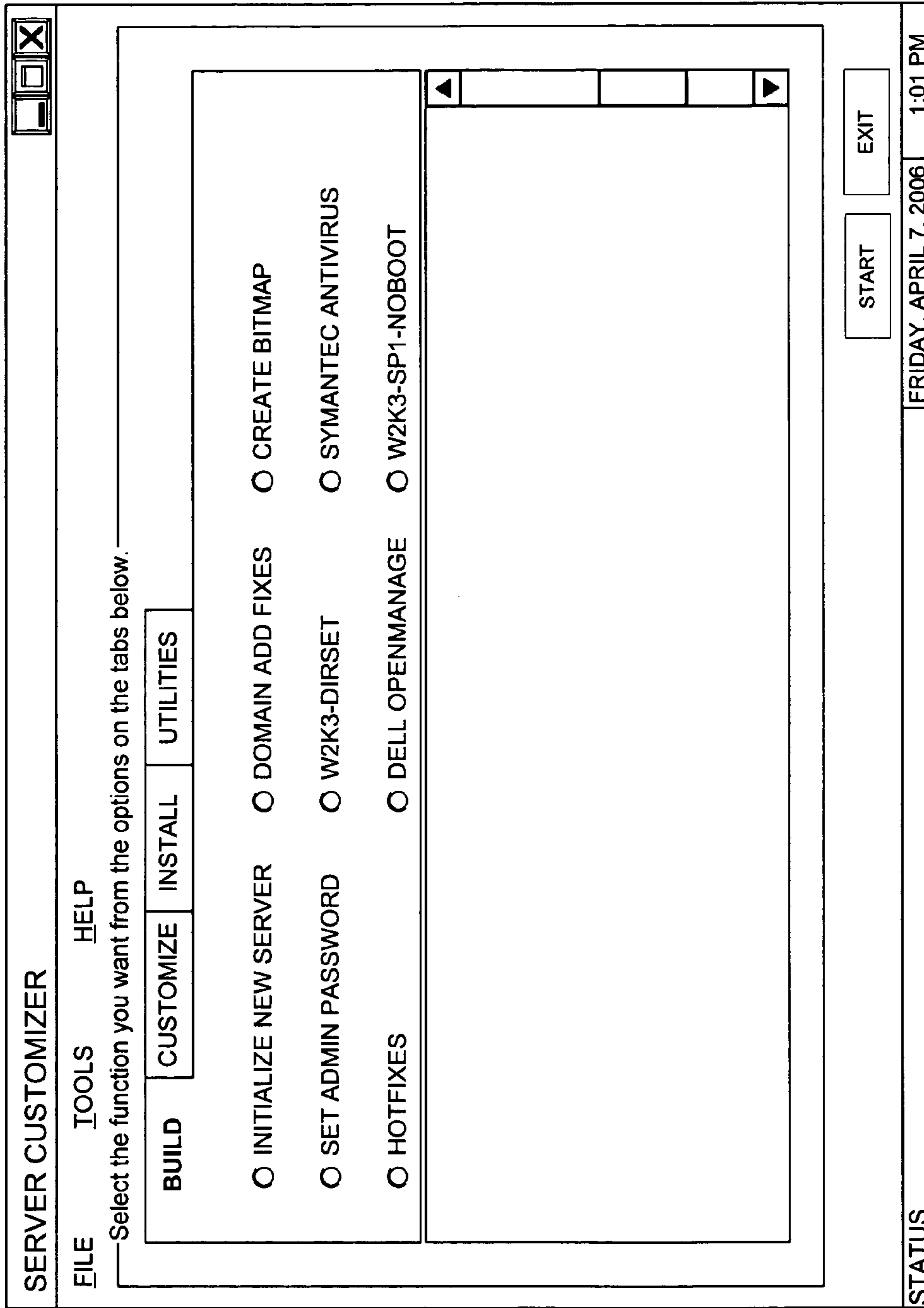


FIG. 1A

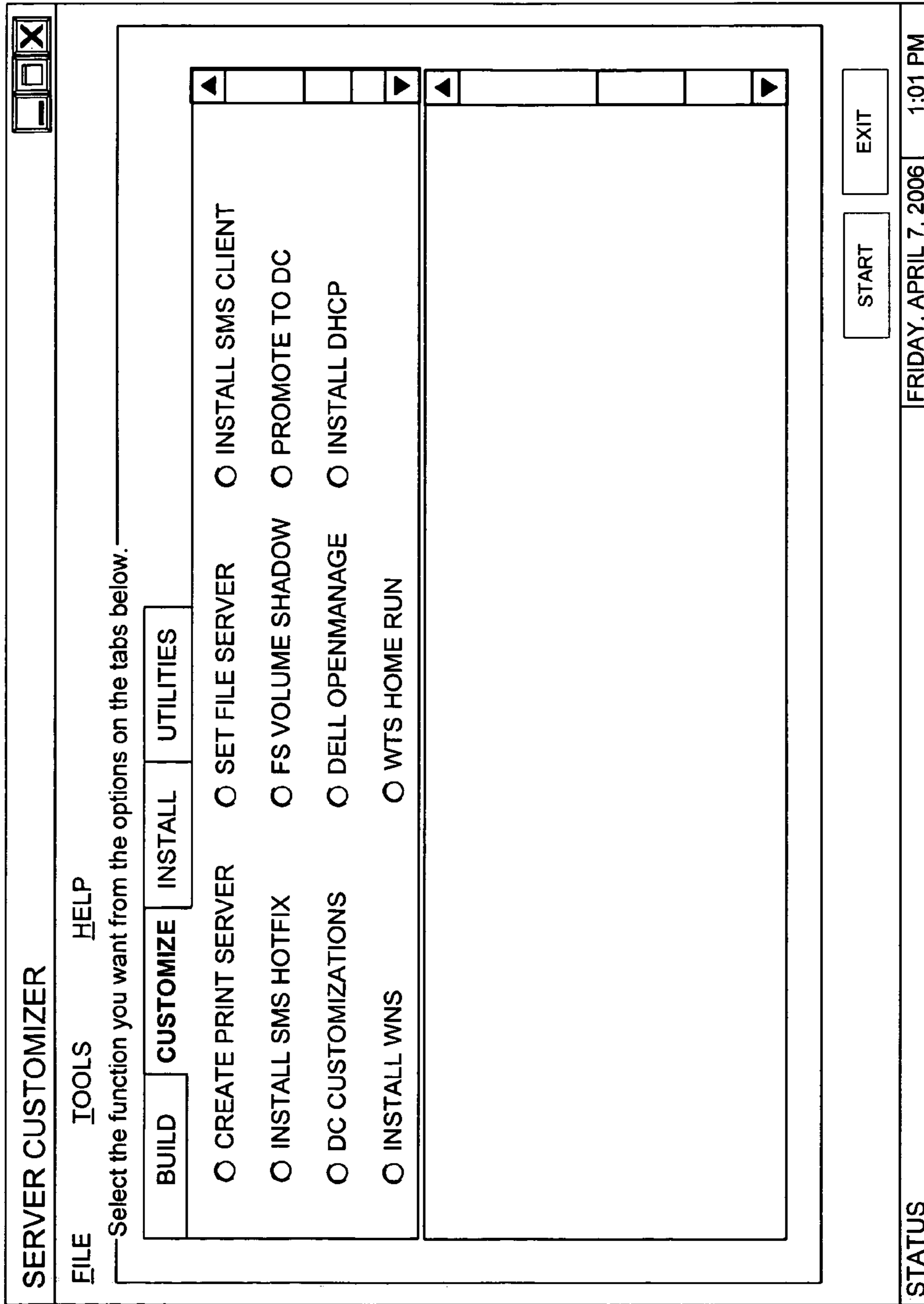


FIG. 1B

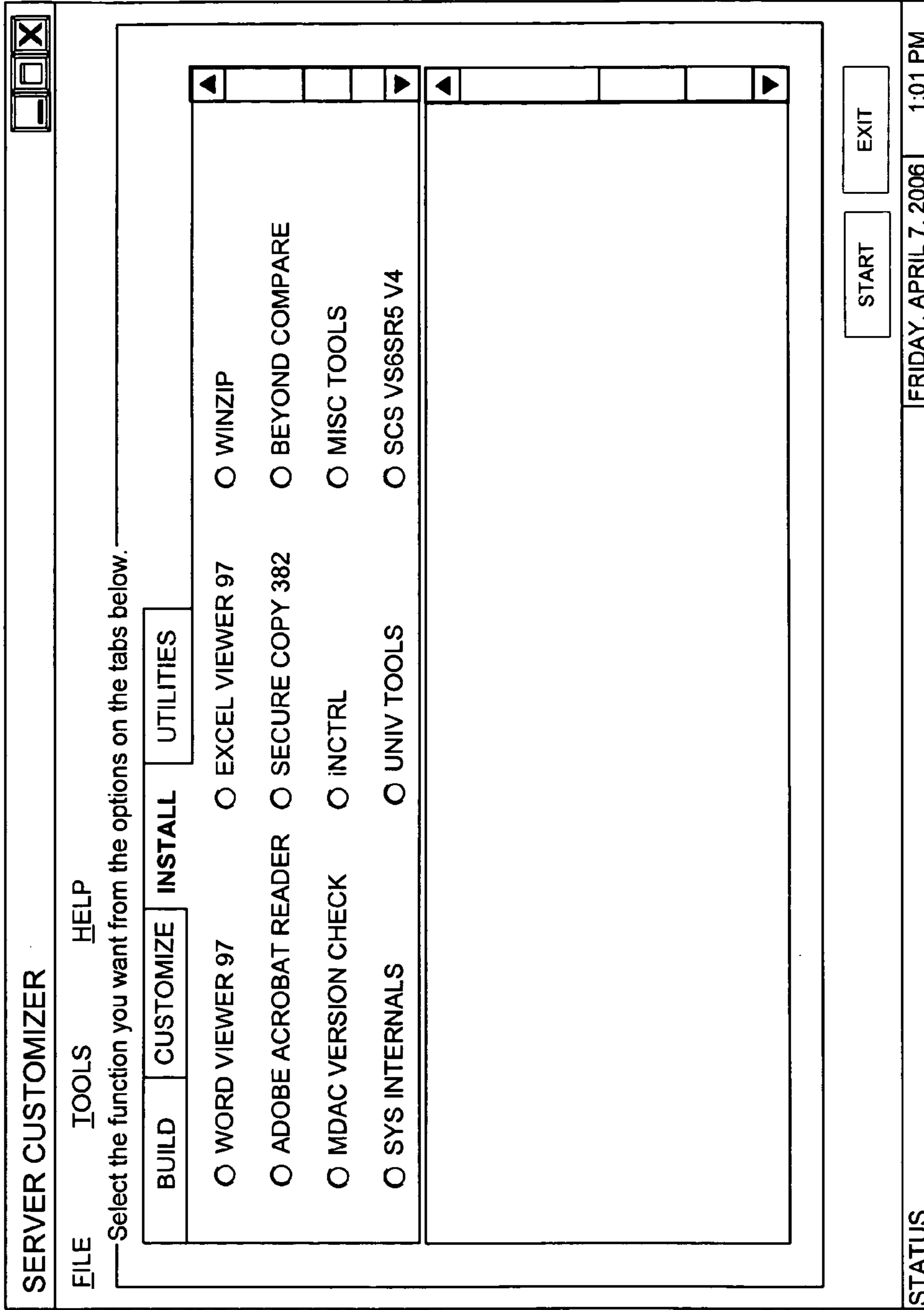


FIG. 1C

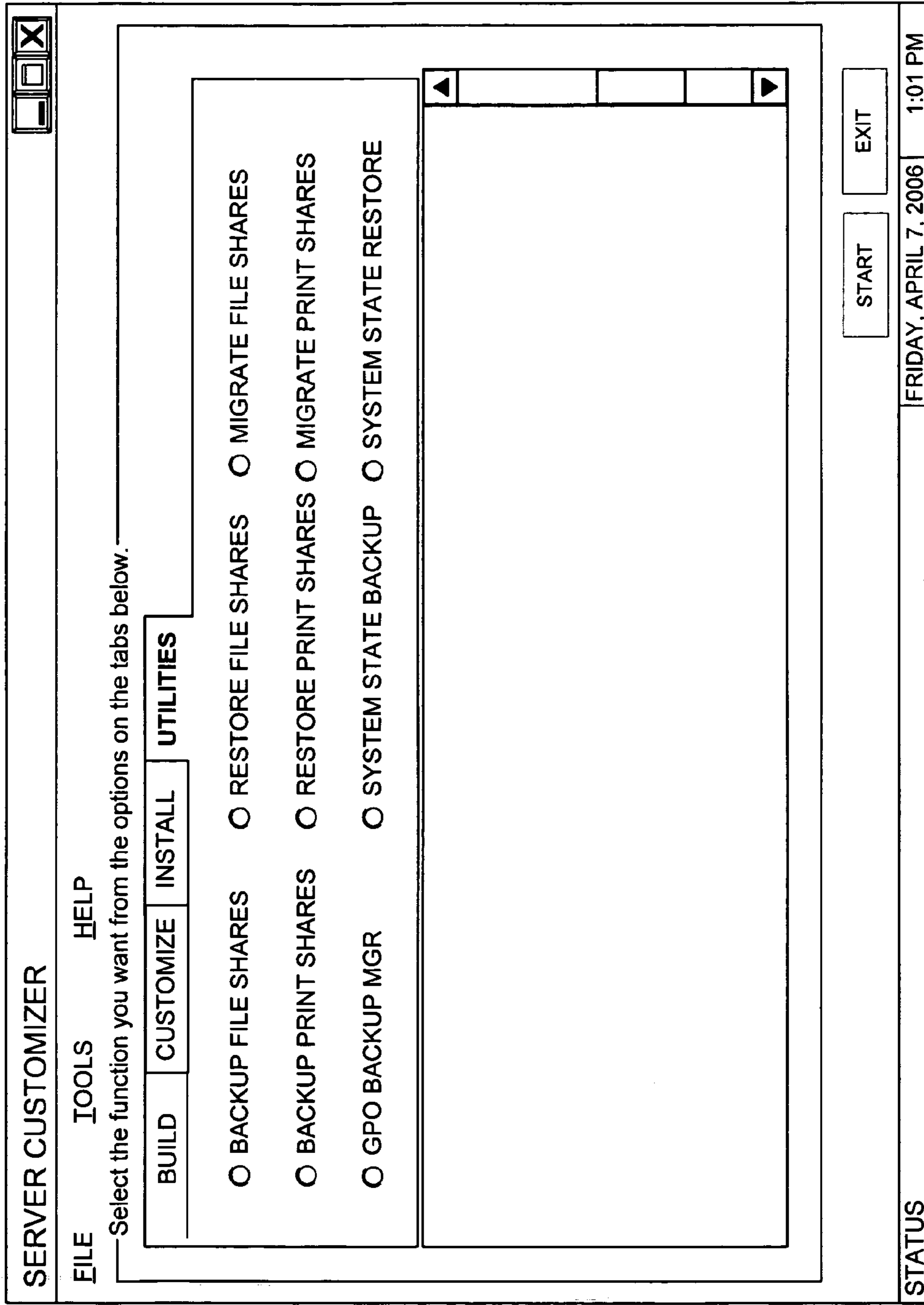


FIG. 1D

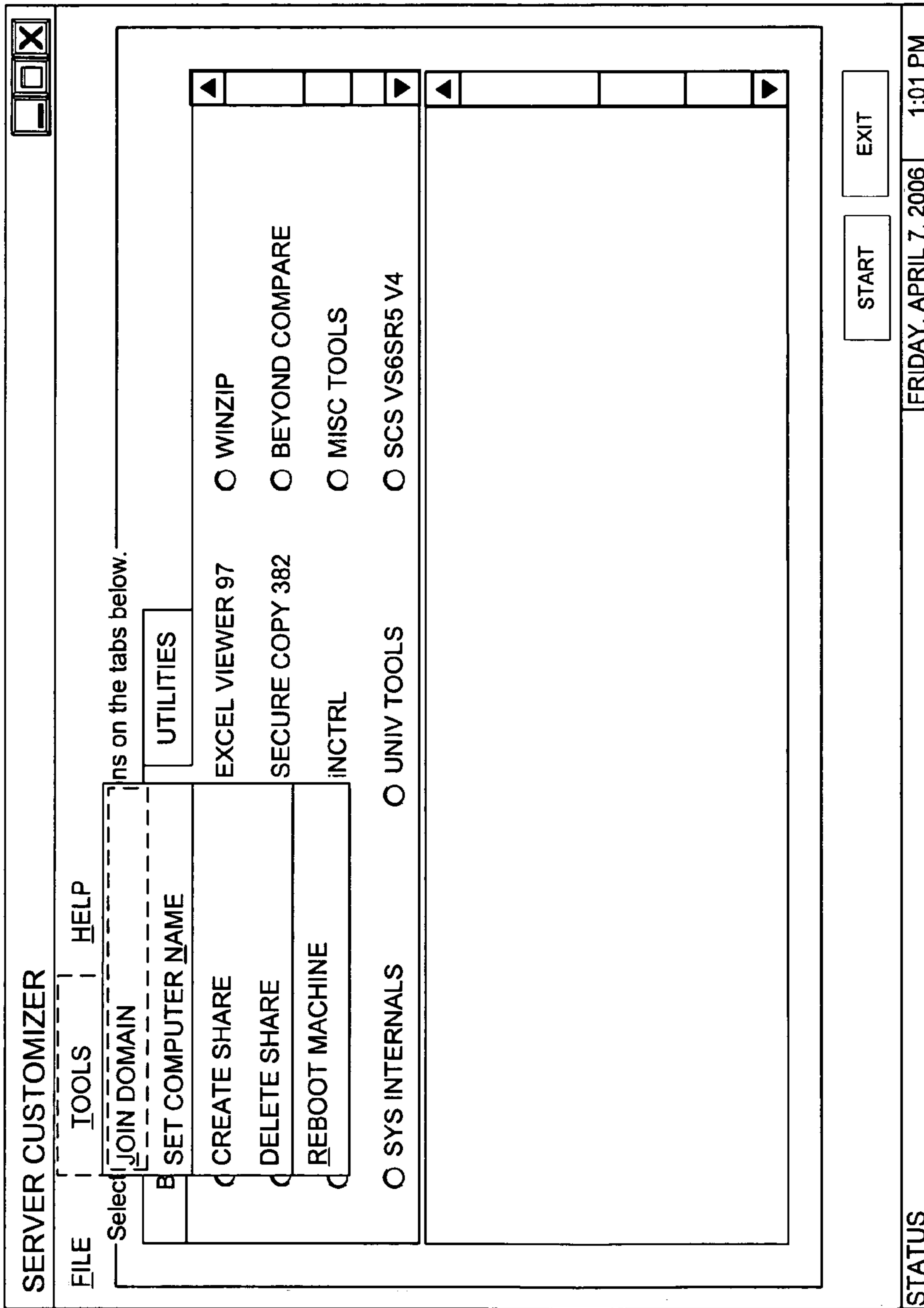


FIG. 2

CREDENTIALS REQUIRED

USER NAME:

PASSWORD:

DOMAIN:

FIG. 3A

SELECT

Please select a domain name. This name will be used during the process when joining the domain. If the domain name is not listed, you can type the name in the box.

PLEASE SELECT FROM THE FOLLOWING ▼

FIG. 3B

SELECT

Please select a domain name. This name will be used during the process when joining the domain. If the domain name is not listed, you can type the name in the box.

PLEASE SELECT FROM THE FOLLOWING ▼

ENERGYCO.COM

TEST.ENERGYCO.COM

BATUSERS.ENERGYCO.COM

PARTNER.ENERGYCO.COM

FIG. 3C

FIG. 3D

SELECT

Please select the appropriate container for BATUSERS.ENERGYCO.COM. This container will correspond to the location and function of the server.

PLEASE SELECT FROM THE FOLLOWING

FIG. 3E

SELECT

Please select the appropriate container for BATUSERS.ENERGYCO.COM. This container will correspond to the location and function of the server.

PLEASE SELECT FROM THE FOLLOWING

OU=ISA,OU=EXTERNAL, OU=SERVERS, DC=B
OU=INTERNAL, OU=SERVERS, DC=BATUSERS
OU=NT 40, OU=INTERNAL, OU=SERVERS, DC=
OU=SAMBA, OU=INTERNAL, OU=SERVERS, DC

SELECT
Please input the name you would like to assign this computer:
<input type="text"/>
<input type="button" value="OK"/> <input type="button" value="CANCEL"/>

FIG. 4

SELECT
Please select the name of the share you wish to create
<input type="text" value="SrvApps"/>
<input type="button" value="OK"/> <input type="button" value="CANCEL"/>

FIG. 5B

SELECT
Please input the path which you will assign the ShareName:
<input type="text" value="e:\srvapps"/>
<input type="button" value="OK"/> <input type="button" value="CANCEL"/>

FIG. 5A

STATUS
SRVAPPS was successfully created on GAXGPP500TS at e:\SRVAPPS
<input type="button" value="OK"/>

FIG. 5C

SELECT
Please input the name of the Share to delete:
<input type="text" value="SrvApps"/>
<input type="button" value="OK"/> <input type="button" value="CANCEL"/>

FIG. 6A

STATUS
SRVAPPS was successfully removed from GAXGPP500TS
<input type="button" value="OK"/>

FIG. 6B


ARE YOU SURE?
 THE SYSTEM WILL NOW REBOOT!
<input type="button" value="YES"/> <input type="button" value="NO"/>

FIG. 7

1

**SYSTEM AND METHOD FOR SERVER
CUSTOMIZATION**

A portion of this disclosure contains material that is subject to copyright protection. The copyright owner consents to the reproduction of the disclosure, as it appears in the Patent and Trademark Office patent files or records, but otherwise reserves all copyright rights whatsoever.

BACKGROUND OF THE INVENTION

The present invention relates generally to management of servers in a large wide area network and, more particularly, to processes for building servers consistently.

A large enterprise with hundreds or thousands of servers may easily build or rebuild 30 or more servers each month with a goal of having each server being built being as similar as possible to the other servers. Having this consistency in the server build process makes the support of the servers, once they are in production environment, much easier to manage. To this end, exhaustive effort is applied to developing processes and procedures to be followed while building a server. However, even with such processes and procedures, due to the number of persons involved in building servers and the odd times at which a server might need to be rebuilt, mistakes are often made which can cause problems once the server is in a production environment.

Prior art solutions for server customization use an assortment of batch files, VISUAL BASIC scripts, and compiled executables. Each of these components can handle part of the installation process, but not the entire process.

Other prior art solutions require detailed manual step-by-step written procedures to make sure the technical components are executed correctly. More training is required for a manual approach because the installer has to understand the procedures and also know which technical tools to use to follow the steps of the procedures. This means that there is more room for error and inconsistency because the installer may miss a step or complete a step incorrectly.

SUMMARY OF THE INVENTION

The invention is directed to a software utility and method to provide consistency in the server build process making the support of the servers in a large enterprise computer network much easier to manage once the servers are in production. The invention provides a software scripting and maintenance solution that includes two pieces of software: server customizer (SrvCust) and the mostly unattended install launch utility (SrvMUI). In an exemplary, non-limiting embodiment, both applications are written in C# and require the Microsoft .NET framework.

The server customizer is a Graphical User Interface (GUI)-based and initialization (.ini) file driven software utility. A pre-determined set of configuration conditions can be set up using the server customizer and then used repeatedly, resulting in highly consistent file server configurations. The server customizer user interface, in an exemplary, non-limiting embodiment, includes four tabs: "Build", "Customize", "Install" and "Utilities". Each tab is populated as a radio button menu via input in the initialization file. The functionality of each radio button is driven by the manner in which the information is input into the initialization file. Some of the functionality built into server customizer focuses on launching different scripts and utilities. The server customizer can also be configured to reboot the machine upon completion of the script, or to enter the domain by inserting into a particular

2

Organizational Unit (OU) in the Active Directory, setting the computer name and create or delete shares. The true functionality comes in the integration of the server customizer with the SrvMUILaunch utility.

SrvMUI is another initialization file driven utility. Though it does have a GUI interface, that interface mostly serves as a status monitoring form mirroring the input to the log file while the operation is taking place. Included among SrvMUI's functionality are registry configuration; keyword substitution; file execution; MSI installations, updating local files with centrally maintained files; rebooting the machine with or without a prompt; service stop, start and restarts; creating and deleting shares, writing to a text based file (for scripting purposes), conditional skipping of certain steps based upon keywords; conditional ending of the process if the machine is or is not a domain controller; and adding or removing a local identifier (ID) or group from the machine. It can also prompt for continued execution, maintain and prompt based upon versioning of the initialization file and set the version of the initialization file. All of this functionality can be chained in an theoretically unlimited fashion in the initialization file. SrvMUI has the ability to run in a standalone manner or to be launched from the server customizer.

In one aspect of the invention, a method is provided for customization of a plurality of servers in a computer network. A server customizer module is generated that includes a server customizer initialization file containing a plurality of arguments for populating and running a plurality of standardized applications, scripts and utilities on each server. The server customizer module is installed on each of the plurality of servers for subsequent execution as part of the server build/customization process. A server unattended install launch module is generated that includes an unattended install launch initialization file for launching a plurality of standardized processes on each server. The server unattended install launch module is installed on each of the plurality of servers for subsequent execution as part of the server build/customization process. The server customizer module and server unattended install launch module are executed on each of the plurality of servers to complete customization of each server.

In another aspect of the invention, a computer program product is provided for customization of a plurality of servers in a computer network. The computer program product comprises a computer readable medium having embedded computer readable code. The computer readable medium comprises program instructions that generate a server customizer module including a server customizer initialization file containing a plurality of arguments for populating and running a plurality of standardized applications, scripts and utilities on each server; program instructions that install the server customizer module on each of the plurality of servers; program instructions that generate a server unattended install launch module including an unattended install launch initialization file for launching a plurality of standardized processes on each server; program instructions that install the server unattended install launch module on each of the plurality of servers; and program instructions that execute the server customizer module and server unattended install launch module on each of the plurality of servers to complete customization of each server.

In yet another aspect of the invention, a system is provided for customization of a plurality of servers in a computer network. The system includes a server unattended install launch module including an unattended install launch initialization file for launching a plurality of standardized processes on each server. The system also includes a server customizer

module, cooperative with the server unattended install launch module, and including a server customizer initialization file containing a plurality of arguments for populating and running a plurality of standardized applications, scripts and utilities on each server. A server customizer module user interface enables user interaction with the server customizer module and includes a plurality of tabs that are generated by the server customizer initialization file wherein each tab includes a plurality of selectable functions. Each selectable function includes a set of keys that provide a value for a name, a location, a plurality of arguments, and a log file associated with the selectable function.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other advantages and aspects of the present invention will become apparent and more readily appreciated from the following detailed description of the invention taken in conjunction with the accompanying drawings, as follows.

FIGS. 1A-1D illustrate user interfaces for the several sections of the server customizer utility in accordance with an exemplary embodiment of the invention.

FIG. 2 illustrates a user interface identifying additional server customizer functions available to the user in an exemplary embodiment of the invention.

FIGS. 3A-3E illustrate exemplary user interface prompts for the "join domain" function of the server customizer.

FIG. 4 illustrates an exemplary user interface prompt for the "set computer name" function of the server customizer.

FIGS. 5A-5C illustrate exemplary user interface prompts for the "create share" function of the server customizer.

FIGS. 6A-6B illustrate exemplary user interface prompts for the "delete share" function of the server customizer.

FIG. 7 illustrates an exemplary user interface prompt for the "reboot machine" function of the server customizer.

DETAILED DESCRIPTION OF THE INVENTION

The following description of the invention is provided as an enabling teaching of the invention and its best, currently known embodiment. Those skilled in the art will recognize that many changes can be made to the embodiments described while still obtaining the beneficial results of the present invention. It will also be apparent that some of the desired benefits of the present invention can be obtained by selecting some of the features of the present invention without utilizing other features. Accordingly, those who work in the art will recognize that many modifications and adaptations of the invention are possible and may even be desirable in certain circumstances and are part of the present invention. Thus, the following description is provided as illustrative of the principles of the invention and not in limitation thereof since the scope of the present invention is defined by the claims.

The exemplary embodiment of the invention is described in terms of the Microsoft .NET framework and the C# high level language. The .NET framework has two main elements: a virtual machine called the Common Language Runtime (CLR) and the Base Class Libraries (BCL). When a program is developed for .NET in a high level language such as C# or VB.NET, the compiler generates Intermediate Language (IL) which is similar to assembly language code. The CLR then takes the code in IL form and converts it to machine code that it executes. The code that is generated is called managed code. The CLR controls all aspects of allocating memory and lifetime of objects. The BCL is a set of classes and functions that enable the programmer to communicate with the operating system and other technologies.

C# is a language derived from C++ by Microsoft for the .NET Framework. C# doesn't use pointers, has single inheritance, does not have macro support, and does not have template support. Single inheritance means that a class can only derive from at most one other class. When a class inherits from another class, it gains all the properties, methods, fields, events, and constructors from the class from which it inherited (i.e., the base class). The class that inherits from the base class is referred to as the derived class.

Most of the BCL classes are written in C#. The other principal language for the .NET

Framework is Visual Basic.NET (VB.NET) that has been modified significantly from VISUAL BASIC to account for the object-oriented features of the BCL. Both C# and VB compile to IL, thus their performance is about the same.

It is important for applications to identify users and control access to resources. Authentication is the act of determining the identity of the requesting user. Typically, the user must present credentials such as a name/password pair in order to be authenticated. Once the authenticated identity is established, the right to access a given resource must be determined.

In an exemplary, non-limiting embodiment, installing the server customizer (SrvCust) utility requires copying three files to a folder on the local computer. These files are SrvCust.exe, SrvCust.ini and ErrorCodes.ini. The folder which is designated for the server customizer will be established in the SrvCust.ini file at the bottom of the file:

```
[DomainList]
numDomain      = 4
Domain1        = ENERGYCO.COM
Domain2        = TEST.ENERGYCO.COM
Domain3        = BATUSERS.ENERGYCO.COM
Domain4        = PARTNER.ENERGYCO.COM
[AppSettings]
NetPath        = "\\ServerBuild\dfsroot\ServerBuild\Windows\
Automation"
LocalPath      = "C:\SrvCust"
CustPath       = "\\ServerBuild\dfsroot\ServerBuild\Windows\
Automation\Customizer"
MUIEXEFileName = "SrvMUI.exe"
```

In the preceding example, the "LocalPath" is the location where the server customizer utility will be located on all machines using the server customizer. Also included in this configuration is the list of domains that will managed as part of the server configuration, the "NetPath" and "CustPath" which is the central location of the server customizer "gold" files (i.e., the server customizer will automatically update itself and all initialization files from this location). Finally, the MUIEXEFileName designates the executable launched when a launch file is designated with an .ini extension in the server customizer main initialization file. Without input from the initialization file, the server customizer is just a blank shell. Adding the pertinent detail into the initialization file makes the server customizer a useful tool.

The server customizer initialization (SrvCust.ini) file is the heart of the entire server customizer system. This file contains the arguments for populating and running applications, scripts and setup functions for the purpose of customizing servers. Each section of the initialization file, i.e., "Build", "Customize", "Install", and "Utilities", corresponds to one of the tabs in the server customizer user interface, as illustrated in FIGS. 1A-1D. Each of the four sections has a set of keys that assigns a value corresponding to a button in the tab being referenced. The first value will always be the number of

5

buttons in the tab. Following that is a set of arguments which supply the name, location, arguments, log file information and potential update path for each of the buttons beginning with the name of the tab and ending with the number of the button.

For example, the following few lines are the beginning of the initialization file which populates the “Build” tab in the first form of the above examples:

```
[Build]
NumBuild          = 9
Name1             = "Initialize New Server"
File1             = "Initialize.ini"
Path1             = "c:\srcust\Build\"
UpdatePath1      = "\\serverbuild\dfsroot\ServerBuild\Windows\
Automation\Customizer\Build\Initialize.ini"
LogPath1         = "c:\SrvCust\Logs\"
LogFile1         = "Initialize.log"
UponCompletion1  = "Join"
Name2            = "Domain Add Fixes"
File2            = "DomainAddFix.ini"
Path2            = "c:\srcust\tools\"
UpdatePath2     = "\\serverbuild\dfsroot\ServerBuild\Windows\
Automation\Customizer\Build\DomainAdd
Fix.ini"
LogPath2        = "c:\SrvCust\Logs\"
LogFile2        = "DomainAddFixes.log"
Name3           = "Create BitMap"
File3          = "WallPaper.exe"
Arg3          = "changenam"
Path3         = "c:\srcust\tools\WallPaper\"
UpdatePath3  = "\\serverbuild\dfsroot\ServerBuild\Windows\
Automation\Scripts\WallPaper\WallPaper.e
xe"
LogPath3     = "c:\SrvCust\Logs\"
LogFile3     = "BitMap.log"
```

As further illustrated in FIG. 1A, the above segment sets the first three radio buttons on the “Build” tab of the server customizer user interface. This is established by the fact that the “Build” section in the initialization file corresponds to the “Build” tab. After that the next required entry is the “Num-Build” key designating how many radio buttons will be built on the tab. In this example, and as further shown in the figure, there will be nine radio buttons on the “Build” tab.

Each button has a set of numerically identified keys that assigns the functionality of the button. The first set of keys has all but one of the possible combinations, Name, File, Path, Arg, UpdatePath, LogPath, LogFile and UponCompletion. Assigning a number to the end of a key assigns the location on the tab. In this example, the first button is assigned its title with:

6

Name1=“Initialize New Server”

This means that the title of the first button will be “Initialize New Server”. The file which is launched is assigned using the “File” key and the number 1:

5 File1=“Initialize.ini”

In many cases this can be an executable file, a batch or command file, or an installation (.msi) file which would be used to run an installation. In this case it is an initialization file which causes the server customizer to launch SrvMUI. This will be discuss further below.

10 The “Path” key denotes the location from which the file will be launched. The location includes the full path including the drive and ends in a backslash (\). For the above example:

Path1=“c:\srcust\Build\”

15 The “Arg” key is the only key not used in the first button. It is literally the argument which would be passed to a launched file when it is launched.

20 The “UpdatePath” key is the location on the network where a “gold” copy of the file being launched is maintained. The server customizer checks the date and time stamp and version of the local file against that of the central file and if different, the local file is updated with the one stored on the network.

The “LogPath” key is the folder where the log for the current activity will be written.

25 The “LogFile” key is the name of the file to which the log will be written in the above location.

Finally, the “UponCompletion” key instructs the server customizer what it should do after the file it has launched has finished its process. In the above example:

30 UponCompletion1=“Join”

The “UponCompletion” key means that when the process “Initialize New Server” finishes it will prompt to join a domain by offering the user a selection of domains and OUs for server placement.

35 Microsoft Windows Installer (MSI) based installations are assumed to be launched from a centralized network path. Other executable files can be launched from a network or local path. If launched from a local path, the user can specify a network path to check for an updated file. The check for updated file will take place before the file is launched. If an update is found, then the updated file will be copied to the launch location. Table 1 below summarizes the key functions associated with the build function of the server customizer utility. Table 2 immediately follows Table 1 and includes the launch file extensions in an exemplary embodiment. The launch file extensions include .exe for an executable file, .msi for an installation file from a central location, .cmd for a command file, .bat for a batch file and .ini for an initialization file.

TABLE 1

Key Functions for Tab Buttons		
NumTabName	Required	Equals the number of button selections to display in the tab.
Name#	Required	The title to be displayed with the button.
File#	Required	The freestanding file name which is to be launched. This can be an .exe, .cmd, .bat, .msi, or .ini type file name.
Path#	Required	Full path to the location of the file. File should not be included. Path should end in a “\”.
Arg#	Optional	This is the argument string, if any that is to be passed to the executable file. MSI arguments should not include /q.
LogPath#	Required	Full path to location that the log recording the process should be written. Does not include the file name. Must end in a “\”
LogFile#	Required	Freestanding file name for the log file to be created to record the process.

TABLE 1-continued

Key Functions for Tab Buttons		
UpdatePath#	Optional	Does not apply to MSI installations. If a file is to be launched from a local location, this can point to a centralized network path which holds the latest or golden copy of the file to be launched. Entering a full path, with file name, in this key will cause the server customizer to check for a later version and update the local file before launching.
UponCompletion#	Optional	Choice of "PromptReboot", "Reboot", "Rename", "Join" or "Delete". Default is none. PromptReboot: Upon completion asks to reboot the server. Reboot: Upon completion reboots the server. Rename: Upon completion prompts to rename the server. Then reboots. Join: Upon completion prompts to join the domain. Then reboots. Delete: Upon completion will delete the file specified in File#.

TABLE 2

Launch File Extensions	
.exe	Launches an executable file. Also can check for update if LaunchUpdatePath is specified. Arguments can be specified using LaunchArg.
.msi	Launches an msi installation file from a central location. The server customizer will expect the name of the folder, under which the .msi file is to be launched, to identically match the button name. Given the example of: [Install] NumInstall = 14 Name1 = "Word Viewer 97" File1 = "Word Viewer 97.msi" Path1 = "\\energyco\dfsroot\Software\InstallPackages\ LogPath1 = "c:\SrvCust\Logs\ LogFile1 = "WordViewer97.log" The server customizer will look at the "Name1" key, "Word Viewer 97" and append that to the end of "Path1" or \\energyco\dfsroot\Software\InstallPackages\ It will then append the "File1" key making the entire launch string read: "\\energyco\dfsroot\Software\InstallPackages\ Word Viewer 97\Word Viewer 97.msi"
.cmd	Launches a command file. Also can check for update if UpdatePath is specified. Arguments can be specified using the "Arg" key.
.bat	Launches a batch file. Also can check for update if UpdatePath is specified. Arguments can be specified using the "Arg" key.
.ini	Launches SrvMUI to run the .ini file specified in the "File" key. Will update the local .ini with the central "gold" copy if it is different.

Other server customizer functions are available under the "Tools" menu as illustrated in FIG. 2. These functions include "Join Domain", "Set Computer Name", "Create Share", "Delete Share", and "Reboot Machine".

The "Join Domain" function generates a series of prompts beginning with the user's name and password credentials as shown in FIG. 3A. The user is then prompted to select a domain name into which the server should be inserted as shown in FIGS. 3B-3C. The user is next prompted to select the OU or container in Active Directory to which the server should be added as shown in FIGS. 3D-3E.

The "Set Computer Name" function prompts the user to change the computer name as illustrated in FIG. 4.

The "Create Share" function prompts the user for the path to the share to create as illustrated in FIG. 5A. The user is then prompted for the name of the share as illustrated in FIG. 5B. If successful, a message similar to that displayed in FIG. 5C will appear.

The "Delete Share" function prompts the user for the name of a share to be deleted as illustrated in FIG. 6A. If successful, a message similar to that displayed in FIG. 6B will appear.

The "Reboot Machine" function will prompt the user for a machine reboot as illustrated in FIG. 7. Selecting "Yes" will cause the machine to reboot immediately.

In an exemplary, non-limiting embodiment, the installation of the SrvMUI utility requires four files: ErrorCodes.ini, ShortCut.dll and SrvMUI.exe. If the SrvMUI utility is going to be run in standalone mode, it will also require an initialization file matching its name, SrvMUL.ini. Simply launching the SrvMUI will cause it to look for SrvMUL.ini in the same folder where SrvMUI.exe exists. This is the standalone usage of the SrvMUI in the initial stages of building a server during the imaging process. Otherwise passing a slash delimited argument of the User ID, password and initialization file can also be used as a standalone method for launching the SrvMUI without using a SrvMUI file. An example of calling the SrvMUI in this manner would be as follows:

```
c:\srvcust\SrvMUI userID/password/test.ini
```

For the most part, the SrvMUI is designed to be run either in the standalone manner above, from the server customizer, or re-launched from the SrvMUI itself.

The graphical user interface part of the SrvMUI is mostly a logging shell. In many uses, this shell will not be visible

while the tool that it is launching is in use. Otherwise, while events are taking place, the log of events will pass through the reporting window and the status bar.

The purpose of the SrvMUI utility is to chain events as part of a procedure, an install process or keeping local files up-to-date with a centralized “gold” copy.

As with the server customizer, the SrvMUI requires a consistent setup regarding the initialization files which are used. Since the SrvMUI is completely driven by initialization files, the format of the initialization file is of utmost importance. Also, as with the server customizer, there is a section at the bottom of each SrvMUI.ini file which needs to be properly filled out for the SrvMUI to function correctly. Incorrectly filling out this portion of the initialization file will cause unpredictable results with the SrvMUI.

```
[AppSettings]
NetPath      = "\\ServerBuild\dfsroot\ServerBuild\Windows\Automation"
LocalPath    = "C:\SrvCust"
CustPath     = "\\ServerBuild\dfsroot\ServerBuild\Windows\Automation\
              Customizer"
FormText     = "Unattended Install"
Complex      = "c3#"

```

In the preceding example, the “LocalPath” is the location where the SrvMUI.exe will be located on all machines using the SrvMUI. Also included in this configuration is the “NetPath” and “CustPath” which is the central location of the server customizer “gold” files (i.e., the SrvMUI will automatically update itself and all initialization files from this location). Finally, the “FormText” key identifies the name which shows up in the banner bar of the form during execution. “Complex” is a key for creating a complex randomly generated and encrypted word and can be used for password creation using the “@Complex@” substitution keyword.

The initialization files used for SrvMUI are the very core of the operation of the SrvMUI. There is an incredible amount of flexibility and capability built into using the initialization files. The initialization files for the SrvMUI operate somewhat differently than the initialization files for the server customizer. The server customizer includes four functional sections and an “AppSettings” section. The SrvMUI can have a theoretically unlimited number of sections plus the “AppSettings” section. Each functional section is a separate process. The process functionality is determined by the extension of the “LaunchFile” key. The following is an example of some settings from an initialization file for the SrvMUI:

```
[Windows Disable Desktop Cleanup Wizard]
LaunchName   = "Registry Value Add (Disable Desktop Cleanup Wizard)"
LaunchFile   = "Registry.Rga"
LaunchPath   = "HKCU\Software\Microsoft\Windows\CurrentVersion\Explorer\Desktop\CleanupWiz\NoRun =1d"
LaunchLogPath = "c:\SrvCust\Logs\"
LaunchLogFile = "Registry.log"
[Install Explorer Lnk]
LaunchName   = "Desktop Explorer Lnk"
LaunchFile   = "Update.upd"
LaunchUpdatePath = "\\serverbuild\dfsroot\ServerBuild\Windows\Automation\Scripts\Shortcuts\Explorer.lnk"
LaunchPath   = "C:\Documents and Settings\All Users\Desktop\Explorer.lnk"
LaunchLogPath = "C:\SrvCust\Logs\"
LaunchLogFile = "SrvCust.log"
[Install CMD Lnk]
LaunchName   = "Desktop CMD Lnk"
LaunchFile   = "Update.upd"
LaunchUpdatePath = "\\serverbuild\dfsroot\ServerBuild\Windows\Automation\Scripts\Shortcuts\Command Prompt.lnk"
LaunchPath   = "C:\Documents and Settings\All Users\Desktop\Command Prompt.lnk"
LaunchLogPath = "C:\SrvCust\Logs\"
LaunchLogFile = "SrvCust.log"
[Install MBSA 1.2]
LaunchName   = "MBSA-v1 .2"
LaunchFile   = "MBSASetup-en.msi"
LaunchPath   = "\\serverbuild\dfsroot\ServerBuild\Windows\InstallFiles\Software\Baseline.Analyzer"
LaunchLogPath = "c:\SrvCust\Logs\"
LaunchLogFile = "MBSA-12.log"
*** HotFixes ***
[Launch HotFixes]
LaunchName   = "Install W2K3 HotFixes"
LaunchFile   = "HotFixes.ini"
LaunchPath   = "C:\srvcust\Build\"
LaunchUpdatePath =
              "\\serverbuild.energyc.com\dfsroot\ServerBuild\Windows\Automation\Customizer\Build\HotFixes.ini
LaunchLogPath = "C:\SrvCust\Logs\"
LaunchLogFile = "MUIHotFixes.log"
[Scramble Guest Password]
LaunchName   = "Scrambling Guest Password"
LaunchFile   = "ScrambleGuest.exe"
LaunchPath   = "C:\SrvCust\Tools\"
LaunchUpdatePath = "\\ServerBuild\dfsroot\ServerBuild\Windows\Automation\Scripts\ScrambleGuest.exe"
LaunchLogPath = "c:\SrvCust\Logs\"
LaunchLogFile = "ScrambleGuest.log"
[Reboot When Done]
LaunchName   = "Reboot upon Completion."
*.rbp- reboot with prompt. *.rbt- reboot without prompt
LaunchFile   = "Reboot.rbt"
LaunchLogPath = "c:\SrvCust\Logs\"
LaunchLogFile = "Reboot.log"

```

11

In the above example, several of the capabilities of the SrvMUI are demonstrated. In the first section, “Windows Disable Desktop Cleanup Wizard”, the “LaunchFile” extension is “.rga” which designates that a registry add will be processed. The registry addition is contained in the “Launch-Path” key as:

```
“HKCU\Software\Microsoft\Windows\CurrentVersion\
  Explorer\Desktop\CleanupWiz\NoRun=1d”
```

The second section, “Install Explorer Lnk”, shows how to update a file using the “.upd” extension. “Install MBSA 1.2” shows how to run an MSI setup using the “.msi” extension. “Launch HotFixes” shows how to run an iterative MUI using the “.ini” extension. Finally, “Reboot When Done” shows how to perform a no prompt reboot using the “.rbt” extension. This is just a small part of the functionality. The full list of capabilities are provided in the tables included below.

12

The most important thing to remember when structuring the SrvMUI.ini files is that each function in the file is setup as a section contained in square brackets []. This section name can be anything, but it must be unique to the rest of the sections in the file. Furthermore, the section name cannot contain any of the “Special Section Names,” otherwise the functionality of the special name will be provided instead of what was intended by the following keys. A list of “Special Section Names” is provided in Table 3 below. There can be, theoretically, any number of sections in the initialization file. The “AppSettings” section must be at the end of every initialization file and must contain accurate information for the file to be processed correctly. Tables 4-5 immediately follow Table 3. Table 4 provides a list of initialization key settings. Table 5 provides a list of launch file extensions.

TABLE 3

Special Section Names	
[Prompt]	With “LaunchArg” value as the message offers a yes or no MessageBox which will stop progress if no is selected. Example: [Prompt] LaunchArg = “Are you sure you want to install DNS on this server?”
[Version]	With “Version” value of a specified version will prompt with yes or no to continue if same version is not set in the registry. Example: [Version] Version = 1.0
[SetVersion]	With “Version” value of a specified version will set the version of .ini in registry after passing this prompt. Example: [SetVersion] Version = 1.0
[Select]	Followed by keys named select followed by a number will popup a menu selection based upon the number of select keys and their values. The actual selection can be used later in the .ini file using the @Select@ substitution keyword. Example: [Select] Select1 = Clusters Select2 = Database Server Select3 = File& Print Select4 = Print Servers Select5 = App Server Select6 = SMS Servers [Update GRC.dat] LaunchName = “Dropping GRC.dat” LaunchFile = “Update.upd” LaunchUpdatePath = “\gaxgpap6 1\c\$\ProgramFiles\SAV\Groups\@Select@GRC.DAT” LaunchPath = “C:\Documents and Settings\All Users\Application Data\Symantec\7.5\grc.dat” LaunchLogPath = “C:\SrvCust\Logs\” LaunchLogFile = “SAV.log” [DeleteSystemStateFile] LaunchName = Removing SystemState File LaunchFile = Delete.del LaunchArg = @get@_SystemState.bkf LaunchPath = e:\SrvCust\Tools\systemstate\restore\@LaunchArg@ LaunchLogPath = “c:\SrvCust\Logs\” LaunchLogFile = “SystemStateRestore.log”

TABLE 4

Initialization Key Settings		
LaunchName	(required)	The name to be displayed in the log file.
LaunchFile	(required)	The freestanding file name which is to be launched.
LaunchPath	(required)	Full path to the location of the file. File should not be included. Path should end in a “\” (if referring to a file path). LaunchPath can also refer to a registry path or a service name corresponding to the LaunchFile extension.
LaunchLogPath	(required)	Full path to location where the log recording the process should be written. Does not include the file name. Must end in a “\”.
LaunchLogFile	(required)	Freestanding file name for the logfile to be created to record the process.
LaunchArg	(optional)	MSI installs should not use the /q. This is the argument string, if any that is to be passed to the executable file. Substitute ‘@Complex@’ for set of complex characters based upon the value assigned to the key “Complex” in the “AppSettings” section. Example of usage: [Write to dcpromo.txt line #8] LaunchName = “Writing to dcpromo.txt” LaunchFile = “Write.wri” LaunchPath = “C:\SrvCust\dcpromo.txt” LaunchArg = “SafeModeAdminPassword=@ComputerName@ @Complex@” LaunchLogPath = “c:\SrvCust\Logs\ LaunchLogFile = “DCPromo.log” Substitute ‘@Get(Arg Name)’ to prompt for an argument. ‘Arg Name’ can be substituted for the display name of the argument being prompted for. This can later be used in the same .ini file as a substitution using the keyword @get@. Example of usage: [Get Remote File Name] LaunchName = “Getting Remote FileName” LaunchFile = “nothing” LaunchArg = @get(Server SystemState is copied from) LaunchPath = “nothing” LaunchLogPath = “c:\SrvCust\Logs\ LaunchLogFile = “SystemStateRestore.log” [Validate Copy System-State Zip File] LaunchName = “Validating Zip Copy” LaunchFile = Validate.skp LaunchArg = “Prompt= Copy SystemState Zip File from@get@?” LaunchLogFile = “DomainAddFixes.log” [CopySystemStateFileLocal] LaunchName = “Copying System State File Local” LaunchFile = “xcopy.exe” LaunchArg = “\\@get@\c\$\srvcust\tools\systemstate\backup\ @get@_SystemState.zip e:\srvcust\tools\systemstate\restore\ /i /F /R /Y /Z” LaunchPath = “@WinDir@\System32\ LaunchLogPath = “c:\SrvCust\Logs\ LaunchLogFile = “SystemStateRestore.log”
LaunchUpdatePath	(optional for exe)	Does not apply to MSI Installations. If a file is to be launched from a local location, this can point to a centralized network path which holds the latest or golden copy of the file to be launched. Entering a full path, with file name, in this key will cause the SrvMUI to check for a later version and update the local file before launching.

TABLE 5

Launch File Extensions	
.exe	Launches an executable file. Also can check for update if LaunchUpdatePath if specified. Example: [Run DNSCmd.exe EnableEDnsProbes] LaunchName = “Setting EnableEDnsProbes” LaunchFile = “DnsCmd.exe” LaunchPath = “C:\SysUtil\SupportTools\ LaunchArg = “/config /EnableEDnsProbes 0” LaunchLogPath = “c:\SrvCust\Logs\ LaunchLogFile = “InstallDNS.log”

TABLE 5-continued

Launch File Extensions	
.cmd	<p>Launches a .cmd file. Also can check for update if LaunchUpdatePath if specified. Arguments can be specified using LaunchArg.</p> <p>Example: [Run DomainAddFixes.cmd]</p> <p>LaunchName = "Domain Add Fixes" LaunchFile = "DomainAddFixes.cmd" LaunchPath = "C:\SrvCust\Tools\ LaunchUpdatePath = "\\serverbuild\dfsroot\ServerBuild\Windows\Automation\Scripts\ DomainAddFixes.cmd" LaunchLogPath = "c:\SrvCust\Logs\ LaunchLogFile = "DomainAddFixes.log"</p>
.bat	<p>Launches a .bat (batch) file. Also can check for update if LaunchUpdatePath if specified. Arguments can be specified using LaunchArg.</p> <p>Example: [Run DomainAddFixes.bat]</p> <p>LaunchName = "Domain Add Fixes" LaunchFile = "DomainAddFixes.bat" LaunchPath = "C:\SrvCust\Tools\ LaunchUpdatePath = "\\serverbuild\dfsroot\ServerBuild\Windows\Automation\Scripts\ DomainAddFixes.bat" LaunchLogPath = "c:\SrvCust\Logs\ LaunchLogFile = "DomainAddFixes.log"</p>
.msi	<p>Launches an .msi installation file from a central location.</p> <p>Example: [Install MBSA 1.2]</p> <p>LaunchName = "MBSA-v1 .2" LaunchFile = "MBSASetup-en.msi" LaunchPath = "\\ServerBuild.energyco.com\dfsroot\ServerBuild\Windows\InstallFiles\ Software\BaselineAnalyzer\ LaunchLogPath = "c:\SrvCust\Logs\ LaunchLogFile = "MBSA-12-Setup.log"</p>
.rga	<p>Adds a registry setting as specified by LaunchPath.</p> <p>Example: [Windows Explorer Windows Classic Folders HKCU]</p> <p>LaunchName = "Registry Value Add (Windows Classic Folders)" LaunchFile = "Registry.Rga" LaunchPath = "HKCU\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced\ WebView=0d" LaunchLogPath = "c:\SrvCust\Logs\ LaunchLogFile = "Registry.log"</p>
.rgd	<p>Removes (deletes) a registry setting as specified by LaunchPath.</p> <p>Example: [Remove GRC Run Key]</p> <p>LaunchName = "Remove CopyGRC from Reg Run" LaunchFile = "RemoveCopyGRC.rgd" LaunchPath = "HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\ Run\COPYGRC=*" LaunchLogPath = "c:\SrvCust\Logs\ LaunchLogFile = "SAV.log"</p>
.upd	<p>Updates the files specified by LaunchPath from LaunchUpdatePath.</p> <p>Example: [Sync Default User Profile]</p> <p>LaunchName = "Default Profile" LaunchFile = "Update.upd" LaunchUpdatePath = "\\ServerBuild.southernco.com\dfsroot\ServerBuild\Windows\Automation\ Customizer\Build\NTUSER.DAT" LaunchPath = "C:\Documents and Settings\Default User\NTUSER.DAT" LaunchLogPath = "C:\SrvCust\Logs\ LaunchLogFile = "SrvCust.log"</p>
.rbp	<p>Reboots the machine with a user prompt. Example: "Reboot.rbp"</p> <p>Example: [Reboot When Done]</p> <p>LaunchName = "Reboot upon Completion." *.rbp- reboot with prompt. *.rbt - reboot without prompt LaunchFile = "Reboot.rbp" LaunchLogPath = "c:\SrvCust\Logs\ LaunchLogFile = "Reboot.log"</p>
.rbt	<p>Reboots the machine without prompting. Example: "Reboot.rbt"</p> <p>Example: [Reboot When Done]</p> <p>LaunchName = "Reboot upon Completion." *.rbp- reboot with prompt. *.rbt - reboot without prompt LaunchFile = "Reboot.rbt" LaunchLogPath = "c:\SrvCust\Logs\ LaunchLogFile = "Reboot.log"</p>

TABLE 5-continued

Launch File Extensions	
.sto	Stops the service specified in LaunchPath. Example: "Service.sto"
	Example:
	[Stop NetIQmc Service]
	LaunchName = "Stopping NetIQmc"
	LaunchFile = "Service.sto"
	LaunchPath = "NetIQmc"
	LaunchLogPath = "C:\SrvCust\Logs\"
	LaunchLogFile = "DCPromo.log"
.sta	Starts the service specified in LaunchPath. Example: "Service.sta"
	Example:
	[Start Volume Shadow Copy service]
	LaunchName = "Starting Volume Shadow Copy service~"
	LaunchFile = "Service.sta"
	LaunchPath = "VSS"
	LaunchLogPath = "C:\SrvCust\Logs\"
	LaunchLogFile = "FSVolumeShadowCopy.log"
.rst	Restarts the service specified in LaunchPath. Example: "Service.rst"
	Example:
	[Restart Symantec antivirus client Service]
	LaunchName = "Stopping Symantec Anti Virus Client"
	LaunchFile = "Service.rst"
	LaunchPath = "Symantec Anti Virus"
	LaunchLogPath = "C:\SrvCust\Logs\"
	LaunchLogFile = "SAV9.log"
.sha	Adds a share using LaunchPath as the Path and LaunchArg as the ShareName.
	Example:
	[Create Share Temp]
	LaunchName = "Create Share Temp"
	LaunchFile = "share.sha"
	LaunchPath = "e:\temp"
	LaunchArg = "Temp\$"
	LaunchLogPath = "c:\SrvCust\Logs\"
	LaunchLogFile = "CreateShare.log"
.shd	Deletes a share using LaunchArg as the ShareName.
	Example:
	[Delete Share Temp]
	LaunchName = "Delete Share Temp"
	LaunchFile = "share.shd"
	LaunchPath = "e:\temp"
	LaunchArg = "Temp\$"
	LaunchLogPath = "c:\SrvCust\Logs\"
	LaunchLogFile = "DeleteShare.log"
.wri	Writes the line specified in LaunchArg to the file specified in LaunchPath.
	Example:
	[Write to dcpromo.txt Key Name]
	LaunchName = "Writing to dcpromo.txt"
	LaunchFile = "Write.wri"
	LaunchPath = "C:\SrvCust\dcpromo.txt"
	LaunchArg = "[DCInstall]"
	LaunchLogPath = "c:\SrvCust\Logs\"
	LaunchLogFile = "DCPromo.log"
	[Write to dcpromo.txt UserName]
	LaunchName = "Writing to dcpromo.txt"
	LaunchFile = "Write.wri"
	LaunchPath = "C:\SrvCust\dcpromo.txt"
	LaunchArg = "UserName=@ID@"
	LaunchLogPath = "c:\SrvCust\Logs\"
	LaunchLogFile = "DCPromo.log"
	[Write to dcpromo.txt Password]
	LaunchName = "Writing to dcpromo.txt"
	LaunchFile = "Write.wri"
	LaunchPath = "C:\SrvCust\dcpromo.txt"
	LaunchArg = "Password=@PW@"
	LaunchLogPath = "c:\SrvCust\Logs\"
	LaunchLogFile = "DCPromo.log"
	[Write to dcpromo.txt UserDomain]
	LaunchName = "Writing to dcpromo.txt"
	LaunchFile = "Write.wri"
	LaunchPath = "C:\SrvCust\dcpromo.txt"
	LaunchArg = "UserDomain=@UserDomain@"
	LaunchLogPath = "c:\SrvCust\Logs\"
	LaunchLogFile = "DCPromo.log"
	[Write to dcpromo.txt line #4]
	LaunchName = "Writing to dcpromo.txt"
	LaunchFile = "Write.wri"
	LaunchPath = "C:\SrvCust\dcpromo.txt"
	LaunchArg = "AutoConfigDNS=No"

TABLE 5-continued

Launch File Extensions	
LaunchLogPath	= "c:\SrvCust\Logs\"
LaunchLogFile	= "DCPromo.log"
[Write to dcpromo.txt line #5]	
LaunchName	= "Writing to dcpromo.txt"
LaunchFile	= "Write.wri"
LaunchPath	= "C:\SrvCust\dcpromo.txt"
LaunchArg	= "CriticalReplicationOnly=No"
LaunchLogPath	= "c:\SrvCust\Logs\"
LaunchLogFile	= "DCPromo.log"
[Write to dcpromo.txt line #6]	
LaunchName	= "Writing to dcpromo.txt"
LaunchFile	= "Write.wri"
LaunchPath	= "C:\SrvCust\dcpromo.txt"
LaunchArg	= "ReplicaDomainDNSName=@Domain@"
LaunchLogPath	= "c:\SrvCust\Logs\"
LaunchLogFile	= "DCPromo.log"
[Write to dcpromo.txt line #7]	
LaunchName	= "Writing to dcpromo.txt"
LaunchFile	= "Write.wri"
LaunchPath	= "C:\SrvCust\dcpromo.txt"
LaunchArg	= "ReplicationSourceDC=@DCServer@"
LaunchLogPath	= "c:\SrvCust\Logs\"
LaunchLogFile	= "DCPromo.log"
[Write to dcpromo.txt line #8]	
LaunchName	= "Writing to dcpromo.txt"
LaunchFile	= "Write.wri"
LaunchPath	= "C:\SrvCust\dcpromo.txt"
LaunchArg	= "SafeModeAdminPassword=@ComputerName@@Complex@"
LaunchLogPath	= "c:\SrvCust\Logs\"
LaunchLogFile	= "DCPromo.log"
.del	Deletes the file specified in LaunchPath. Example: [Delete dcpromo.txt final]
LaunchName	= "Deleting DCPromo.txt"
LaunchFile	= "File.del"
LaunchPath	= "C:\SrvCust\dcpromo.txt"
LaunchLogPath	= "c:\SrvCust\Logs\"
LaunchLogFile	= "DCPromo.log"
.end	Conditional end. Usages: IsDomainController.end -If the machine is a DC it will stop execution. NotDomainController.end -If it is not a DC it will stop execution. IIS Installed.end - If IIS is installed, it will stop execution IsIPAddress.end - If LaunchArg IPAddress is the machines IP address then end execution. NotTerminalServer.end - If machine is not a Terminal Server, end. ServiceInstalled.end - If the service named in LaunchArg is installed, end. Example: [If DC Stop]
LaunchName	= "Checking to see if DC"
LaunchFile	= "IsDomainController.end"
LaunchLogPath	= "c:\SrvCust\Logs\"
LaunchLogFile	= "DCPromo.log"
[If IIS Stop]	
LaunchName	= "Checking to see if IIS is installed"
LaunchFile	= "IISInstalled.end"
LaunchLogPath	= "c:\SrvCust\Logs\"
LaunchLogFile	= "DCPromo.log"
[If NSA Stop]	
LaunchName	= "Checking to see if Server is NSA"
LaunchFile	= "isIPAddress.end"
LaunchArg	= "145.125.65.35"
LaunchLogPath	= "c:\SrvCust\Logs\"
LaunchLogFile	= "InstallDNS.log"
[If Not Terminal Server Stop]	
LaunchName	= "Checking to see if WTS"
LaunchFile	= "NotTerminalServer.end"
LaunchLogPath	= "c:\SrvCust\Logs\"
LaunchLogFile	= "WTSHomeRun.log"
[If SAV Stop]	
LaunchName	= "Checking to see if SAV is installed"
LaunchFile	= "ServiceInstalled.end"
LaunchArg	= "Symantec Anti Virus"
LaunchLogPath	= "c:\SrvCust\Logs\"
LaunchLogFile	= "SAV9.log"

TABLE 5-continued

Launch File Extensions	
.skp	<p>Conditional skip.</p> <p>Usage:</p> <p>Condition.skp -Condition statement in LaunchArg is true, execution performs the following key command set. Otherwise it will skip it.</p> <p>LaunchArg can have a variety of possible comparisons as pointed out in the examples below. If the comparisons are false or prompt is selected as no, the following key command set is skipped.</p> <p>Example:</p> <p>In the example below, the substitution, “@ComputerName@” is compared to the first two characters of the actual computer name. The number of characters to compare is contained in the parentheses.</p> <p>[Skip NSB if Not MS]</p> <p>*Skips the NSB setting below if machine name does not begin with “MS”.</p> <p>LaunchName = “Skip NSB if not AL”</p> <p>LaunchFile = ServerName.skp</p> <p>LaunchArg = @ComputerName@=MS(2)</p> <p>LaunchLogPath = “c:\SrvCust\Logs\”</p> <p>LaunchLogFile = “InstallDNS.log”</p> <p>[Skip Not EnergyCo]</p> <p>LaunchName = “Skip Password Filter if not EnergyCo”</p> <p>LaunchFile = Conditional.skp</p> <p>LaunchArg = @Domain@=Energyco.com</p> <p>LaunchLogPath = “c:\SrvCust\Logs\”</p> <p>LaunchLogFile = “DCCustomizations.log”</p> <p>[Validate Add energyco\ACL-SC-OIS-ADM to Administrators]</p> <p>LaunchName = “Validating Group Add”</p> <p>LaunchFile = Validate.skp</p> <p>LaunchArg = “Prompt=Add OIS Admins to local Administrators group?”</p> <p>launchLogFile = “DomainAddFixes.log”</p>
.idr	<p>Removes the ID supplied under LaunchPath from the local machine.</p> <p>Example:</p> <p>[Remove SUPPORT_ account]</p> <p>LaunchName = “Remove Support Account”</p> <p>LaunchFile = “RemoveID.IDR”</p> <p>LaunchPath = “SUPPORT_388945a0”</p> <p>LaunchLogPath = “c:\SrvCust\Logs\”</p> <p>LaunchLogFile = “RemoveID.log”</p>
.ida	<p>Adds the ID to the LocalGroup, both supplied in LaunchPath as “LocalGroupName,Domain\user(or Group)” on the local machine.</p> <p>Example:</p> <p>[Add energyco\ACL-SC-OIS-ADM to Administrators]</p> <p>LaunchName = “Adding energyco\ACL-SC-OIS-ADM to Administrators”</p> <p>LaunchFile = “AddID.IDA”</p> <p>LaunchPath = “Administrators,energyco\ACT-SG-OIF-ADM”</p> <p>LaunchLogPath = “c:\SrvCust\Logs\”</p> <p>LaunchLogFile = “DomainAddFixes.log”</p>

As an example of an initialization file for the SrvMUI utility, the “Build” section of the server customizer that created the button named “Domain Add Fix” launches the following file: 45

```

*DomainAddFix.ini
[Version]
Version = 1.0
***** Domain Add Fix *****
[If DC Stop]
LaunchName      = “Checking to see if DC”
LaunchFile      = “IsDomainController.end”
LaunchLogPath   = “c:\SrvCust\Logs\”
LaunchLogFile   = “DomainAddFixes.log”
[Run DomainAddFixes.cmd]
LaunchName      = “Domain Add Fixes”
LaunchFile      = “DomainAddFixes.cmd”
LaunchPath      = “C:\SrvCust\Tools\”
LaunchUpdatePath = “\serverbuild\dfsroot\ServerBuild\Windows\Automation\
Scripts\DomainAddFixes.cmd”
LaunchLogPath   = “c:\SrvCust\Logs\”
LaunchLogFile   = “DomainAddFixes.log”
[Add energyco\ADM-BackupOperators to Backup Operators]

```

-continued

```

LaunchName      = "Adding energyco\ADM-BackupOperators to Backup
                  Operators"
LaunchFile       = "AddID.IDA"
LaunchPath      = "Backup Operators,southernco\ADM-BackupOperators"
LaunchLogPath   = "c:\SrvCust\Logs\"
LaunchLogFile   = "DomainAddFixes.log"
[Add energyco\ADM-ServerOperators to Power Users]
LaunchName      = "Adding energyco\ADM-ServerOperators to Power Users"
LaunchFile       = "AddID.IDA"
LaunchPath      = "Power Users,energyco\ADM-ServerOperators"
LaunchLogPath   = "c:\SrvCust\Logs\"
LaunchLogFile   = "DomainAddFixes.log"
[Validate Add energyco\ADM-WebInfrastuct to Administrators]
LaunchName      = "Validating Group Add"
LaunchFile       = Validate.skp
LaunchArg       = "Prompt = Add Web Infrastructure to local Administrators group?"
LaunchLogFile   = "DomainAddFixes.log"
[Add energyco\ADM-WebInfrastuct to Administrators]
LaunchName      = "Adding energyco\ADM-WebInfrastuct to Administrators"
LaunchFile       = "AddID.IDA"
LaunchPath      = "Administrators,Energyco\ADM-WebInfrastuct"
LaunchLogPath   = "c:\SrvCust\Logs\"
LaunchLogFile   = "DomainAddFixes.log"
[Validate Add energyco\ADM-ExchSiteAdmins to Administrators]
LaunchName      = "Validating Group Add"
LaunchFile       = Validate.skp
LaunchArg       = "Prompt = Add Exchange Operators to local Administrators group?"
LaunchLogFile   = "DomainAddFixes.log"
[Add energyco\ADM-ExchSiteAdmins to Administrators]
LaunchName      = "Adding energyco\ADM-ExchSiteAdmins to Administrators"
LaunchFile       = "AddID.IDA"
LaunchPath      = "Admiistrators,energyco\ADM-ExchSiteAdmins"
LaunchLogPath   = "c:\SrvCust\Logs\"
LaunchLogFile   = "DomainAddFixes.log"
[Validate Add energyco\ADM-DBAAdmins to Administrators]
LaunchName      = "Validating Group Add"
LaunchFile       = Validate.skp
LaunchArg       = "Prompt = Add Oracle/SQL DBAs to local Administrators group?"
LaunchLogFile   = "DomainAddFixes.log"
[Add energyco\ADM-DBAAdmins to Administrators]
LaunchName      = "Adding energyco\ADM-DBAAdmins to Administrators"
LaunchFile       = "AddID.IDA"
LaunchPath      = "Administrators,energyco\ADM-DBAAdmins"
LaunchLogPath   = "c:\SrvCust\Logs\"
LaunchLogFile   = "DomainAddFixes.log"
[Validate Add energyco\ACL-SC-OIS-ADM to Administrators]
LaunchName      = "Validating Group Add"
LaunchFile       = Validate.skp
LaunchArg       = "Prompt = Add OIS Admins to local Administrators group?"
LaunchLogFile   = "DomainAddFixes.log"
[Add energyco\ACL-SC-OIS-ADM to Administrators]
LaunchName      = "Adding energynco\ACL-SC-OIS-ADM to Administrators"
LaunchFile       = "AddID.IDA"
LaunchPath      = "Administrators,energyco\ACL-SC-OIS-ADM"
LaunchLogPath   = "c:\SrvCust\Logs\"
LaunchLogFile   = "DomainAddFixes.log"
[Add energyco\ProductCertificationDelivery if in BatUsers]
LaunchName      = "Validating Group Add"
LaunchFile       = NotBatUsers.skp
LaunchArg       = "@Domain@=BatUsers"
LaunchLogFile   = "DomainAddFixes.log"
[Add energyco\ProductCertificationDelivery to Administrators]
LaunchName      = "Adding energyco\ProductCertificationDelivery to Administrators"
LaunchFile       = "AddID.IDA"
LaunchPath      = "Administrators,energyco\ProductCertificationDelivery"
LaunchLogPath   = "c:\SrvCust\Logs\"
LaunchLogFile   = "DomainAddFixes.log"
[SetVersion]
Version =1.0
[AppSettings]
NetPath        = "\\ServerBuild\dfsroot\ServerBuild\Windows\Automation"
LocalPath      = "C:\SrvCust"
CustPath       = "\\ServerBuild\dfsroot\ServerBuild\Windows\Automation\Customizer"
FormText       = "Domain Add Fixes"

```

As another example of an initialization file for the SrvMUI utility, the “Build” section of the server customizer that created the button named “Symantec Antivirus” launches the SAV.ini initialization file below. The GRC.dat file is a text file containing configuration information for the “clients” of a

Symantec Antivirus server. The selected machines receive policy settings from the Symantec Antivirus server through the Grc.dat file. The file writes certain settings to a machine’s registry.

```

*SAV .ini
[Prompt]
LaunchArg          = "Are you sure you want to install Symantec AntiVirus on this machine?"
[Version]
Version = v9.0.1.1000
[Select]
Select1           = Clusters
Select2           = Database Server
Select3           = File& Print
Select4           = Print Servers
Select5           = App Server
Select6           = SMS Servers
[Expand PTW]
LaunchName        = "Expanding Package"
LaunchFile        = "SymantecAntiVirus9.0.1.1000.exe"
LaunchArg         = "-e"
LaunchPath        = "@Temp@"
LaunchUpdatePath = "\\energyco.com\dfsroot\Software\WksImage\SymantecAntiVirus\
SymantecAnti Virus9.0. 1.1000.exe"
LaunchLogPath     = "c:\SrvCust\Logs\"
LaunchLogFile     = "SAV.log"
[Install SAV]
LaunchName        = "Installing SAV"
LaunchFile        = "Setup.exe"
LaunchArg         = "/hrlog=@Temp@sav.log"
LaunchPath        = "@WinDir@\Downloaded Installations\Symantec AntiVirus\"
LaunchLogPath     = "c:\SrvCust\Logs\"
LaunchLogFile     = "SAV.log"
[Remove GRC Run Key]
LaunchName        = "Remove CopyGRC from Reg Run"
LaunchFile        = "RemoveCopyGRC.rgd"
LaunchPath        = "HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run\COPYGRC="
LaunchLogPath     = "c:\SrvCust\Logs\"
LaunchLogFile     = "SAV.log"
[Update GRC.dat]
LaunchName        = "Dropping GRC.dat"
LaunchFile        = "Update.upd"
;LaunchUpdatePath = "\\serverbuild\dfsroot\ServerBuild\Windows\InstallFiles\Software\NAV\v8.11_b323\
Groups\@Select@\GRC.DAT"
LaunchUpdatePath = "\\gaxgpap61\c$\Program Files\SAV\
Groups\@Select@\GRC.DAT"
LaunchPath        = "C:\Documents and Settings\All
Users\ApplicationData\Symantec\Symantec AntiVirus Corporate Edition\7.5\grc.dat"
LaunchLogPath     = "C:\SrvCust\Logs\"
LaunchLogFile     = "SAV.log"
[Restart Symantec antivirus client Service]
LaunchName        = "Stopping Symantec Anti Virus Client"
LaunchFile        = "Service.rst"
LaunchPath        = Symantec AntiVirus
LaunchLogPath     = "C:\SrvCust\Logs\"
LaunchLogFile     = "SAV.log"
[Delete Symantec Install file]
LaunchName        = "Deleting SAV Install file"
LaunchFile        = "File.del"
LaunchPath        = "@Temp@\SymantecAntiVirus9.0.1.1000.exe"
LaunchLogPath     = "c:\SrvCust\Logs\"
LaunchLogFile     = "SAV.log"
[SetVersion]
Version = v9.0.1.1000
*Reboot from Cust.ini
[AppSettings]
NetPath           = "\\ServerBuild\dfsroot\ServerBuild\Windows\Automation"
LocalPath         = "C:\SrvCust"
CustPath          = "\\ServerBuild\dfsroot\ServerBuild\Windows
Automation\Customizer"
FormText          = "Install Symantec Antivirus

```

The system and method of the present invention have been described as computer-implemented processes. It is important to note, however, that those skilled in the art will appreciate that the mechanisms of the present invention are capable of being distributed as a program product in a variety of forms, and that the present invention applies regardless of the particular type of signal bearing media utilized to carry out the distribution. Examples of signal bearing media include, without limitation, recordable-type media such as diskettes or CD ROMs, and transmission type media such as analog or digital communications links.

The corresponding structures, materials, acts, and equivalents of all means plus function elements in any claims below are intended to include any structure, material, or acts for performing the function in combination with other claim elements as specifically claimed.

Those skilled in the art will appreciate that many modifications to the exemplary embodiment are possible without departing from the spirit and scope of the present invention. In addition, it is possible to use some of the features of the present invention without the corresponding use of the other features. Accordingly, the foregoing description of the exemplary embodiment is provided for the purpose of illustrating the principles of the present invention and not in limitation thereof since the scope of the present invention is defined solely by the appended claims.

What is claimed is:

1. A method for customization of a plurality of servers in a computer network comprising the steps of:

generating a server customizer module including a server customizer initialization file containing a plurality of arguments for populating and running a plurality of standardized applications, scripts and utilities on each server;

installing the server customizer module on each of the plurality of servers;

presenting a graphical user interface to a user;

prompting the user for a plurality of initialization file inputs through the graphical user interface;

receiving a plurality of initialization file inputs from the user through the graphical user interface;

generating a server unattended install launch module including an unattended install launch initialization file for launching a plurality of standardized processes on each server, wherein the unattended install launch initialization file is generated from the plurality of initialization file inputs;

installing the server unattended install launch module on each of the plurality of servers; and

executing the server customizer module and server unattended install launch module on each of the plurality of servers to complete customization of each server.

2. The method for customization of a plurality of servers of claim **1** wherein execution of the server unattended install launch module is launched from the server customizer module.

3. The method for customization of a plurality of servers of claim **1** wherein execution of the server unattended install launch module is performed independently of the server customizer module.

4. The method for customization of a plurality of servers of claim **1** wherein the server customizer initialization file comprises a functional section and an application settings section.

5. The method for customization of a plurality of servers of claim **4** wherein the functional section comprises at least one of a build section, a customize section, an install section, and an utilities section.

6. The method for customization of a plurality of servers of claim **1** further comprising generating a user interface for the server customizer module.

7. The method for customization of a plurality of servers of claim **6** wherein the user interface for the server customizer module comprises a plurality of tabs that are created by the server initialization file.

8. The method for customization of a plurality of servers of claim **7** wherein each tab comprises a plurality of selectable functions, with each selectable function including a set of keys that provide a value for a name, a location, a plurality of arguments, and a log file associated with the selectable function.

9. The method for customization of a plurality of servers of claim **8** wherein the set of keys further provides a value for an update path associated with the selectable function.

10. The method for customization of a plurality of servers of claim **8** wherein the set of keys further comprises a key that instructs the server customizer module on an action to take upon completion of a launched process.

11. The method for customization of a plurality of servers of claim **10** wherein the action to take is selected from the group comprising a reboot of the server, a prompt to reboot the server, a prompt to rename the server, a prompt to join a domain, and a deletion of a specified file.

12. The method for customization of a plurality of servers of claim **1** wherein the server customizer module further comprises a domain list and a plurality of application settings.

13. The method for customization of a plurality of servers of claim **12** wherein the domain list includes each domain that is managed by the server customizer module.

14. The method for customization of a plurality of servers of claim **12** wherein the plurality of application settings includes identification of a central network location storing a most current version of the server customizer module and initialization files, the server customizer module and server customer initialization file being automatically updated from the corresponding centrally stored versions.

15. The method for customization of a plurality of servers of claim **1** wherein the server unattended install launch module comprises a functional section including a plurality of functions, each function representing a specific process; and an application settings section.

16. The method for customization of a plurality of servers of claim **15** wherein the plurality of processes launched by the server unattended launch module on each server includes at least one of a registry configuration; a keyword substitution; a file execution; an executable file installation; a local file update with a centrally maintained file; a server reboot; a customization service start, stop and restart; a share file creation; a share file deletion; and an addition or removal of a local identifier or group from the server.

17. A computer program product for customization of a plurality of servers in a computer network comprising computer readable hardware having computer readable code embedded therein, the computer readable hardware comprising:

program instructions executed by at least one processor that generate a server customizer module including a server customizer initialization file containing a plurality of arguments for populating and running a plurality of standardized applications, scripts and utilities on each server;

program instructions executed by at least one processor that install the server customizer module on each of the plurality of servers;

29

program instructions executed by at least one processor that present a graphical user interface to a user;
 program instructions executed by at least one processor that prompt the user for a plurality of initialization file inputs through the graphical user interface;
 program instructions executed by at least one processor that receive a plurality of initialization file inputs from the user through the graphical user interface;
 program instructions executed by at least one processor that generate a server unattended install launch module including an unattended install launch initialization file for launching a plurality of standardized processes on each server, wherein the unattended install launch initialization file is generated from the plurality of initialization file inputs;
 program instructions, executed by at least one processor that install the server unattended install launch module on each of the plurality of servers;
 and
 program instructions executed by at least one processor that execute the server customizer module and server unattended install launch module on each of the plurality of servers to complete customization of each server.

18. The computer program product for customization of a plurality of servers of claim **17** wherein the program instructions that generate a server customizer module comprise program instructions executed by at least one processor that launch the server unattended install launch module.

19. The computer program product for customization of a plurality of servers of claim **17** wherein the program instructions that generate the server customizer initialization file comprise program instructions executed by at least one processor that generate a functional section and an application settings section.

20. The computer program product for customization of a plurality of servers of claim **19** wherein the program instructions that generate a functional section include program instructions executed by at least one processor that define at least one of a build section, a customize section, an install section and an utilities section.

21. The computer program product for customization of a plurality of servers of claim **17** further comprising program instructions executed by at least one processor that generate a user interface for the server customizer module.

22. The computer program product for customization of a plurality of servers of claim **21** wherein the program instructions that generate a server customizer initialization file comprise program instructions executed by at least one processor that define a plurality of tabs on the user interface.

23. The computer program product for customization of a plurality of servers of claim **22** wherein the program instructions that define each tab comprise program instructions executed by at least one processor that create a plurality of selectable functions, with each selectable function including a set of keys that provide a value for a name, a location, a plurality of arguments, and a log file associated with the selectable function.

24. The computer program product for customization of a plurality of servers of claim **23** wherein the set of keys further provides a value for an update path associated with the selectable function.

25. The computer program product for customization of a plurality of servers of claim **23** wherein the set of keys further comprises a key that instructs the server customizer module on an action to take upon completion of a launched process.

26. The computer program product for customization of a plurality of servers of claim **25** wherein the action to take is

30

selected from the group comprising a reboot of the server, a prompt to reboot the server, a prompt to rename the server, a prompt to join a domain, and a deletion of a specified file.

27. The computer program product for customization of a plurality of servers of claim **17** wherein the program instructions that generate the server customizer module further comprise program instructions executed by at least one processor that generate a domain list and a plurality of application settings.

28. The computer program product for customization of a plurality of servers of claim **27** wherein the domain list includes each domain that is managed by the server customizer module.

29. The computer program product for customization of a plurality of servers of claim **27** wherein the program instructions that generate the plurality of application settings include program instructions executed by at least one processor that identify a central network location storing a most current version of the program instructions for the server customizer module and initialization files, the program instructions for the server customizer module and server customer initialization file being automatically updated from the corresponding centrally stored versions.

30. The computer program product for customization of a plurality of servers of claim **17** wherein the program instructions that generate the server unattended install launch module comprise program instructions executed by at least one processor that generate a functional section including a plurality of functions, each function representing a specific process; and an application settings section.

31. The computer program product for customization of a plurality of servers of claim **30** wherein the plurality of processes launched by the program instructions that generate the server unattended launch module on each server include at least one of a registry configuration; a keyword substitution; a file execution; an executable file installation; a local file update with a centrally maintained file; a server reboot; a customization service start, stop and restart; a share file creation; a share file deletion; and an addition or removal of a local identifier or group from the server.

32. A system for customization of a plurality of servers in a computer network, the system comprising:

a graphical user interface configured to:

prompt a user for a plurality of initialization file inputs through the graphical user interface; and
 receive a plurality of initialization file inputs from the user through the graphical user interface;

a server unattended install launch module including an unattended install launch initialization file for launching a plurality of standardized processes on each server, the unattended install launch initialization file is generated from the plurality of initialization file inputs received from the user through the graphical user interface;

a server customizer module, cooperative with the server unattended install launch module, including a server customizer initialization file containing a plurality of arguments for populating and running a plurality of standardized applications, scripts and utilities on each server; and

a server customizer module user interface including a plurality of tabs that are generated by the server customizer initialization file, wherein each tab includes a plurality of selectable functions.

33. The system for customization of a plurality of servers of claim **32** wherein the server customizer initialization file comprises a functional section and an application setting section.

31

34. The system for customization of a plurality of servers of claim 33 wherein the functional section of the server customizer initialization file comprises at least one of a build section, a customize section, an install section, and an utilities section.

35. The system for customization of a plurality of servers of claim 32 wherein each selectable function includes a set of keys that provide a value for a name, a location, a plurality of arguments, and a log file associated with the selectable function.

36. The system for customization of a plurality of servers of claim 35 wherein the set of keys further provides a value for an update path associated with the selectable function.

37. The system for customization of a plurality of servers of claim 35 wherein the set of keys further comprises a key that instructs the server customizer module on an action to take upon completion of a launched process.

38. The system for customization of a plurality of servers of claim 36 wherein the action to take is selected from the group comprising a reboot of the server, a prompt to reboot the server, a prompt to rename the server, a prompt to join a domain, and a deletion of a specified file.

39. The system for customization of a plurality of servers of claim 32 wherein the server customizer module further comprises a domain list and a plurality of application settings.

32

40. The system for customization of a plurality of servers of claim 39 wherein the domain list includes each domain that is managed by the server customizer module.

41. The system for customization of a plurality of servers of claim 39 wherein the plurality of application settings includes identification of a central network location storing a most current version of the server customizer module and initialization files, the server customizer module and server customer initialization file being automatically updated from the corresponding centrally stored versions.

42. The system for customization of a plurality of servers of claim 32 wherein the server unattended install launch module comprises a functional section including a plurality of functions, each function representing a specific process; and an application settings section.

43. The system for customization of a plurality of servers of claim 32 wherein the plurality of processes launched by the server unattended launch module on each server includes at least one of a registry configuration; a keyword substitution; a file execution; an executable file installation; a local file update with a centrally maintained file; a server reboot; a customization service start, stop and restart; a share file creation; a share file deletion; and an addition or removal of a local identifier or group from the server.

* * * * *